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The Economics of Effective Leadership

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Editorial

Prof. Ernst Fehr
Director of the
UBS International Center
of Economics in Society

Dear reader

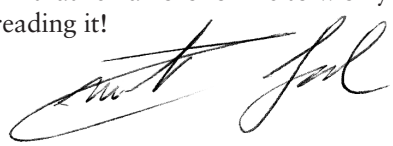
We are proud to launch the third UBS Center Public Paper, which focuses on the economics of effective leadership.

While there is a widespread conventional wisdom that leadership is important for the functioning of firms and societies, it seems that it was only of minor importance for economists. Fortunately, this is changing, as more economic research directly studies the inspirational and motivational functions of leadership, and how these aspects of leaders can influence firm productivity.

In this Public Paper, the author presents the latest academic insights into the recent development in economic science on the subject of leadership. What are the challenges that researchers face when studying leadership? Why are words so important and why can a leader – in some cases – be more effective by restricting how much information he or she shares with followers? You will receive the answers to these and related questions from Prof. Roberto Weber, a leading specialist in behavioral and experimental economics.

As in the other papers of this series, the author of this Public Paper is an international top specialist in his field, and the Public Paper is written in a clear, compact, and highly readable format, free of academic jargon and understandable without prior knowledge about the subject. It therefore meets the UBS Center's aspiration to provide new relevant research findings on key economic topics of our time to a broad audience.

All that remains is for me to wish you much enjoyment while reading it!



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Abstract

Economists have typically assumed that the only way for leaders to get people to do things is to use carrots (e.g., pay raises) or sticks (e.g., threats of firing) to incentivize a desired behavior. One of the important contributions of recent research on leadership is to test the extent to which this really is true. Can leaders also motivate and inspire workers by their statements and speeches? Or, is the best way to get followers to do something by creating hard incentives for them?

A rapidly growing set of economic studies view leadership as a fundamental issue in understanding firms and government. In this Public Paper, the author reviews recent developments in economic science on this subject. While many research findings confirm some commonly held beliefs about leadership, other findings turn many of them upside down. For example, one striking set of findings is the extent to which mere words have a similar – or, sometimes even stronger – effect than financial incentives.

Moreover, research shows that a leader's success or failure is often a haphazard process – full of biases and luck – and frequently detached from the noble traits we assume to be characteristic of good leadership. An effective leader will take this into account, recognizing that there are many strategies that make leaders successful or unsuccessful, but that he or she often has little control over many other important factors. This new evidence will greatly affect the insights economists can disperse to practitioners about how to lead organizations and societies more effectively.

Introduction

There is a widespread conventional wisdom that leadership is important for the functioning of firms and societies. The actions and words of political leaders command great attention, as with the annual "State of the Union" speech delivered by United States' presidents and other similar addresses by national leaders. The business press and shareholders emphasize the importance of CEO turnover and the valuable role of a strong leader – such as Walt Disney, Jack Welch, or Steve Jobs – for defining corporate culture, establishing vision and priorities, and influencing a firm's profitability. Financial markets closely attend to and scrutinize the credibility of central bankers' public statements about economic conditions and future policy directions. Even local school boards and amateur sports teams concern themselves greatly with who is leading them and with what these people say and do. Moreover, history and the arts are full of prominent examples of influential leaders inspiring bold action merely by their statements to followers – from Mark Anthony's, "Friends, Romans, countrymen …" speech in Shakespeare's Julius Caesar, to Winston Churchill's famous radio address to Great Britain ("we shall fight on the beaches … we shall never surrender") at the onset of World War II. We all agree, it seems, that leaders matter.

However, one group of people for whom leadership seems to matter little is economists. If you took economics courses while studying at university, think back to them. You almost certainly learned about firms, perhaps something about how they operate and what makes them profitable. But it is also very likely that there was virtually no role for leadership in these firms. In discussions of governments and policy, there was also very likely little discussion of leadership as an important factor. To the extent that there was something like leadership in these courses, it was probably exclusively focused on a "leader" as someone in a firm who sets pay contracts in order to motivate workers to exert effort. To date, the study of "leadership" in economics still focuses primarily on corporate leaders as managers who obtain worker effort and influence profitability mainly by structuring contracts and incentives in conjunction with performance monitoring.[1] Similarly, in the case of political leaders – even though economists have cleverly shown that such leaders matter – the economic perspective focuses primarily on political leaders' ability to impact outcomes through their influence on economic policies (see box "Do leaders matter for economic growth?" and figure 1 on page 5 and 6).

But, is this really all that leaders do? I suspect most of us would disagree. In the typical person's view of the role of a CEO, there is more to this professional function than making strategic decisions and establishing compensation policies. As John Kotter noted in an influential 1990 Harvard Business Review article,[2] effective corporate leaders create a vision for the future of a company and inspire and motivate employees to pursue this vision, often voluntarily. Similarly, strong political leaders do more than manipulate policy levers, they also reassure citizens and markets in times of crisis, and convince them of an obligation to prioritize the common good over their narrow self-interest. Think of John F. Kennedy's declaration, "My fellow Americans, ask not what your country can do for you, ask what you can do for your country,"

which had no immediate impact on policy, but is the type of bold and influential statement we associate with strong and effective leadership.

But, this notion of leadership – even though widely recognized by most people as important for understanding what makes some firms successful and others fail – is largely absent from economic theories and research. Part of this is the result of skepticism among many economists that such leadership really matters. After all, in a science rooted in the power of "hard" incentives, what room is there for the "softer" forms of inspiration and persuasion exerted by corporate and political leaders?

Fortunately, this is changing, as more economic research directly studies the inspirational and motivational functions of leadership, and how these aspects of leaders can influence firm productivity. This is fortunate on two fronts. First, it fills an important hole in economic research – the study of how leaders shape the behavior of followers. Second, it brings the rigorous methods of economic research to the study of leadership. This is important, as economists are often very careful and critical in establishing whether a specific factor – such as a particular type of leader – really causes particular outcomes. In the case of leadership, where there is a great deal of conventional wisdom about the powerful effects of leaders, this rigorous scrutiny is valuable for identifying what exactly leaders do and do not do. That is, economists contribute to our understanding of leadership both by asking how much of what leaders do can really be shown to matter? And, relatedly, where do leaders matter less than people think?

Do leaders matter for economic growth?

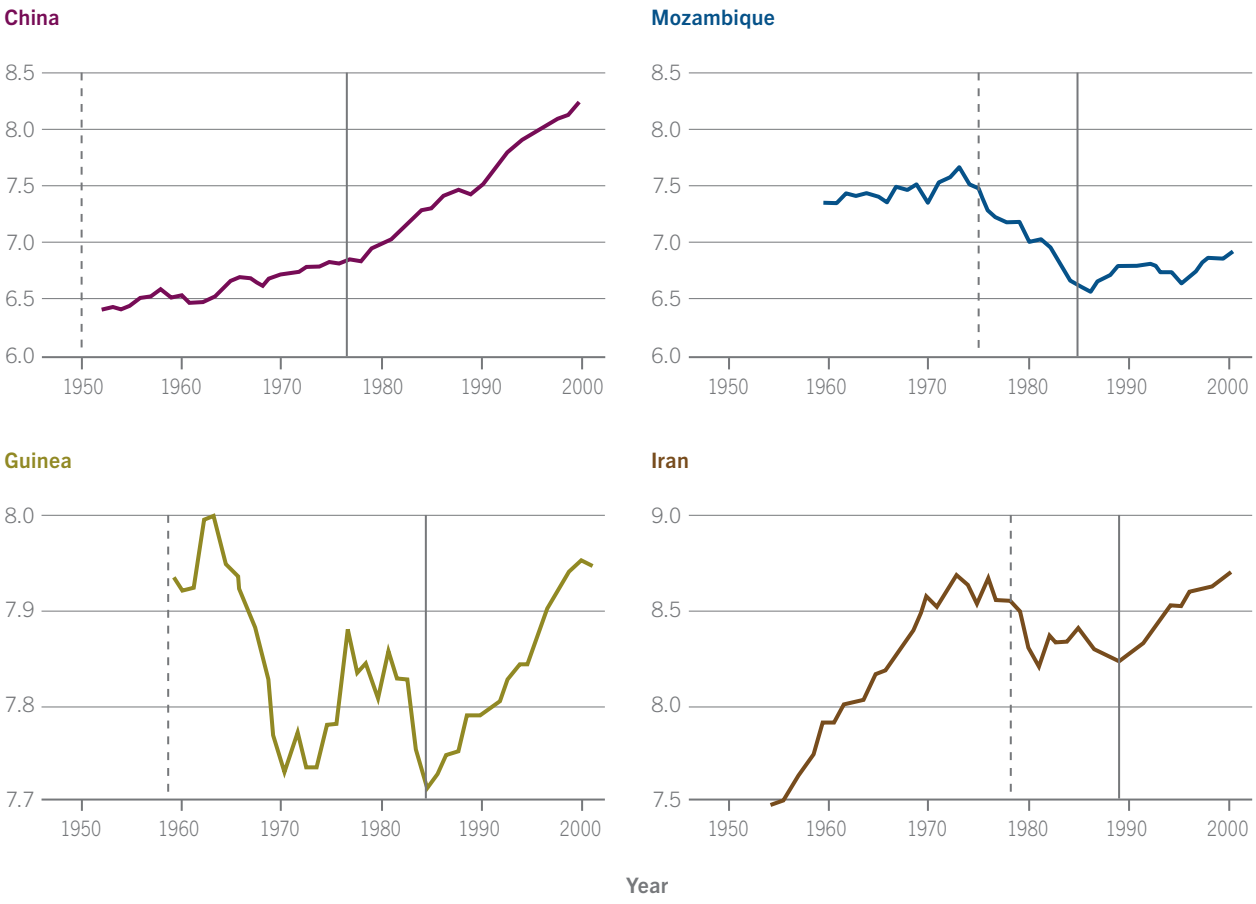
An important question for economists is whether national leaders affect economic growth. People certainly believe that there are good and bad national leaders, and that the good ones produce greater prosperity for their countries. But, showing this is difficult. It may be, for example, that US presidents who preside over periods of economic growth – say, Barack Obama or Ronald Reagan – actually played critical roles in producing that growth. Or, perhaps other factors present at the time of their elections, or even factors that produced their elections, led to subsequent growth. Similarly, while it is natural to interpret the contraction of Zimbabwe's economy over more than a decade in the early 2000s as resulting from Robert Mugabe's presidency, it may be the case that other conditions, such as poor institutions, led to both the economic contraction and the persistence of Mugabe in power.

To be able to provide a conclusive answer to the question of whether national leaders affect economic growth, one needs variation in leadership that is unlikely to be affected by conditions present in a particular country. That is, one needs leaders to come and go randomly, and then use this random variation to identify whether they have an effect on outcomes. One clever approach, used by Benjamin Jones and Benjamin Olken,[3] looks at cases in which there was a change in national leadership due to death by natural causes or an accident – that is, changes in leadership that are unlikely to have been caused by economic conditions, policies put in place because of those conditions, or expectations of future conditions.

The study finds that, in fact, changes in leadership do affect economic growth trajectories. This is illustrated in figure 1 (on the next page), which demonstrates some clear changes in the trajectory of per capita GDP, adjusted for purchasing power parity, across time following the death of a national leader (indicated by the solid vertical lines). Importantly, this relationship is stronger in countries where leaders possess greater autocratic power, which is where one would expect national leaders to have stronger effects.

Fig. 1 **Growth and leader deaths**

Log PPP GDP per-capita



Note: Figure shows the logarithm of purchasing-power-parity adjusted GDP per capita in different countries that experienced a "random" leadership change. The tenures of the relevant leaders are indicated by the vertical lines.

Source: Jones and Olken (2005)

The difficulty of studying leadership

Before proceeding to the research, it is worth stressing at least two reasons why economists have understudied leadership. This will provide insights into the challenges of studying leadership, and into the approaches economists have recently employed in how they approach the study of leadership.

First, if leaders' influence is often through words that motivate and inspire, how can this be reconciled with economic theory, which is traditionally dependent on models of the effects of "hard" incentives, such as pay contracts? The notion that words – even powerful words like, "My fellow Americans, ask not what your country can do for you, ask what you can do for your country" – can lead people to act differently are difficult to incorporate into economic models. But, as the research below shows, this kind of leadership has an effect on behavior. Hence, this reflects more of a problem with textbook economics than with leadership as topic worthy of economists' attention.

The second challenge is more serious. People will frequently claim that a leader is effective because he or she produced good outcomes. But, showing that the leader actually produced the outcomes – as opposed to some other factor that exerted significant influence over outcomes – is often impossible. For example, Nelson Mandela is credited with facilitating the end of apartheid and the peaceful transition to a society with equal rights in South Africa, and very likely played a critical role in this process. But, can we know what would have happened without him? Perhaps the same outcomes would have resulted without him. (As we'll see in the next section, a "good leader" might simply be someone who stumbles into the right situation.) Without the ability to study a world with a particular leader's influence and one without that leader, it is impossible to know with certainty whether the leader had an effect. Therefore, much of the economic research on leadership has benefited from experiments, where almost identical situations – that differ only in the presence or absence of a leader, or in the type of leader present – are studied. This simple method, which often takes place in abstract laboratory environments, has provided some of the most important insights and tests in economics for better understanding the factors that influence human behavior (see box "Experiments in Economics" on page 8).

Experiments in economics – A valuable research tool

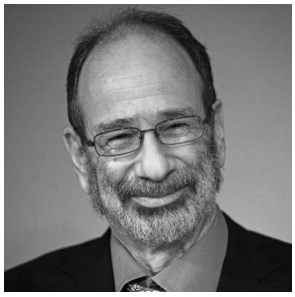
Most areas of science rely on controlled experimentation. This is often the only way to truly establish, for instance, that some factor, X, causes some phenomenon, Y. By experimentally varying whether or not X is present, and holding everything else constant, researchers are able to cleanly determine whether X actually causes Y. So, for example, to test whether a particular gene causes a disease, the most compelling evidence arises when scientists can manipulate the presence or absence of the gene, perhaps in animals, and then observe whether or not the disease occurs.

Economics as a research discipline has historically not relied on experimental methods. However, this began to change with pioneering work by Vernon Smith and others, in the 1960s, who developed methods for conducting carefully controlled laboratory experiments in economics. In such experiments, complex real-world contexts like markets and firms are simplified into a simple set of interactions between laboratory subjects, usually students, who make decisions (e.g., buying, selling, choosing a hypothetical level of effort) that are rewarded financially in a manner that corresponds to how such actions are rewarded in the real world. In 2002, Smith received the Nobel Memorial Prize in Economic Sciences, precisely for his path breaking work in introducing this type of experimental research to economics.

In the last several decades, the use of laboratory experiments has expanded and become part of the toolkit employed by economists to study how different factors affect economic behavior and outcomes. For example, Elinor Ostrom (2009 Nobel Laureate) used experiments in her research on how alternative institutions facilitate societies' management of common resources. Alvin Roth (2012 Nobel Laureate) has used experiments extensively in his research designing and testing the effectiveness of market mechanisms for producing efficient outcomes in important policy areas, such as matching kidney donors to recipients.

As we will see, controlled experiments are especially important in the study of leadership, since they often present the only way to determine whether some characteristic of leaders is responsible for the behavior of followers or organizational outcomes. In such experiments, a group of "workers" often makes hypothetical effort choices, and are paid for some combination of their efforts. To understand the effects of leadership, the researcher varies whether and how a leader can exert influence over the group.

Elinor Ostrom by © Holger Motzkau



Alvin Roth by © Bengt Nyman

Vernon Smith © Cato Institute

Being a "good" leader may have nothing to do with leadership

Before discussing several instances that demonstrate how leaders are effective in influencing the behaviors of followers, we start with some striking examples of where our conventional wisdoms about the importance of leaders – and the characteristics that make them effective – seem to be unwarranted.

To do this, we'll first introduce a situation – based on simple game theory – that is particularly powerful for studying the effectiveness of leadership. Suppose that a firm has several workers, who can commit some level of effort to a collective endeavor. This could be working more hours, working faster, keeping company secrets, or maintaining a high level of service when interacting with customers. The particular situation we're interested in is one in which the lowest level of effort expended by any worker determines how productive the firm is as a whole. This is a kind of production often referred to as "weak-link" production, because the weakest link determines the overall strength of the chain. For example, consider a luxury hotel brand, where any instance of poor service can be disastrous for the firm's reputation, or a highly regulated industry where any compliance violation can be very costly and endanger the firm's survival.

A simple game from game theory can provide us with an example of weak-link production, as shown in figure 2. Specifically, suppose that you are an employee of a firm who must choose some amount of effort to contribute toward a common goal. Working as hard as possible toward this goal represents giving 100% effort, while not working at all toward this goal and doing something else instead represents 0% effort. What you care about is how much effort you exert, and the lowest level of effort provided by anyone in the firm. These combinations yield different levels of benefit for you, net of any effort you put in. This level of benefit could represent, for example, how happy you are with that outcome, after taking into account all the work you put into it and how much of a final bonus you get for that outcome. So, for example, the greatest benefit for you (200) is when everyone, including you, exerts 100% effort. This is when the firm is most profitable and you are well compensated for the effort that you put in. But, the worst outcome for you is when you exert 100% effort and someone in the firm exerts no effort, which gives you a benefit level of zero. In this case, you would rather have also exerted 0% effort, ending up with a net benefit of 100, which is worse than 200 but better than 0.

Note that, in this kind of weak-link production setting, if someone else in the organization only exerts 50% of the total possible effort, then you do not benefit by exerting more than 50%. You get 150 by also exerting 50% effort, and do worse by exerting more effort – for example, you only get 125 if you exert 75% effort. Similarly, you do worse by exerting less effort than 50%, since in that case you lower the minimum effort in the organization; for example, if you exert 25% effort, then the new minimum in the organization is 25% and your benefit is 125. If even one person in the organization is shirking entirely – by exerting 0% effort – then no one benefits from exerting any effort at all. However, if everyone exerts 100% of the possible effort, indicated by the green outcome at the top-left of the table, then the firm is highly productive and everyone is as well

off as possible. Nobody wants to exert less than 100% effort in this case, since 200 is the greatest possible benefit in the table.

Hence, this situation requires mutual confidence among workers – they need to recognize the benefits of exerting high effort and they need to have confidence that all other team members will do so. In this sense, the game nicely mirrors Franklin D. Roosevelt's warning about the Great Depression as a situation in which, "the only thing we have to fear is fear itself" – if everyone is confident that everyone else will exert 100% effort, then there is no reason for anyone not to exert 100% of the possible effort. But, doubt – or fear about what others will do – can be disastrous.

Perhaps not surprisingly, maintaining high effort in this kind of setting becomes more challenging if there are more workers involved. When there are only two people, they only need to worry about one another exerting high effort. When there are many more people involved, it becomes harder to maintain the high levels of mutual confidence necessary to keep everyone choosing 100% effort – there are simply more people to worry about. Hence, as a leader trying to get people to exert high effort, it is much easier to do this when the group of workers is small than when it is large.

One study by experimental economists exploited this difference in easy- vs. hard-to-lead situations, to see if leaders are credited or blamed for things over which they have no control.[4] In a laboratory experiment, subjects in the role of "leaders" were randomly assigned to try to get either easy-to-lead groups (with few members) or hard-to-lead groups (with many more members) to exert high effort. The weak-link production situation was repeated eight times, and after the second repetition, leaders stood at the front of the room, and gave short speeches after receiving suggestions on

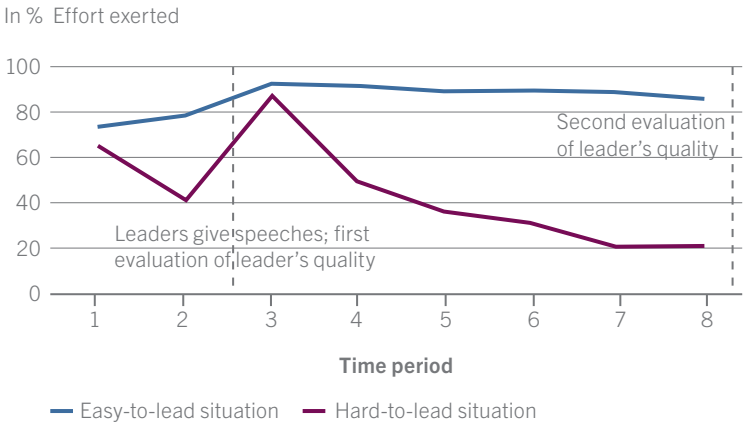
Fig. 2 **Your benefits from different combinations of own and others' effort levels in a weak-link setting**

Your effort	100 %	75 %	50 %	25 %	0 %
100 %	200	150	100	50	0
75 %		175	125	75	25
50 %			150	100	50
25 %				125	75
0 %					100

Lowest effort exerted by anyone in the firm (including you)

Note: This table describes a "weak-link" production setting, where the benefit to you (a worker) of exerting effort depends on the lowest effort expended by anyone in the firm. The top-left outcome (shaded in green) is the best possible outcome. The bottom-right outcome (shaded in purple) is what will happen if people think someone else will exert zero effort. Since it is impossible for your effort to be lower than the lowest by anyone in the firm, some cells are empty.

Fig. 3 **Situation in which groups' success or failure has nothing to do with the quality of a leader**



Note: The figure shows the average effort exerted in groups that are easy to lead and hard to lead. In the experiment, groups performed the effort task for two time periods. Then a randomly selected leader spoke to the group, before the third trial. At this point, participants in the experiment rated the quality of the leader. After six additional periods, during which the situation determined which groups succeeded or failed, participants again evaluated the quality of the leader.

Source: Weber et al. (2001)

the content of the speeches. The main interest in the study was in the extent to which leaders were perceived to be good or bad leaders, and whether they were rewarded or blamed for outcomes over which they had no control.

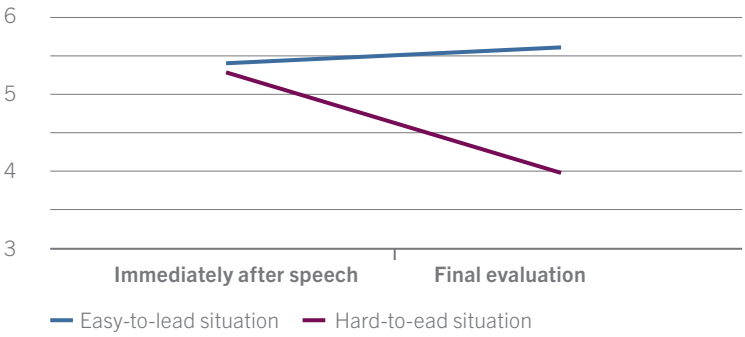
Figure 3 shows the degree of effort expended across time in the study. In the first period, there is very little difference in effort expended in small and large groups. However, in the second period, one can already see the differences in how easy and hard to lead the two situations are. After leaders spoke, between periods 2 and 3, there was an increase in effort in both settings – thus, the statements by leaders appear to have had an effect in getting people to exert more effort. But, in the longer term, the degree to which the two situations are easy or hard to lead has a stronger effect on outcomes. Groups either succeed or fail based on how large the groups are, with little effect of leaders.

The key measure in the study was people's perceptions of how good the leaders are. Participants in the experiment were therefore asked to evaluate the leader's "overall leadership ability," both immediately after the leader spoke (after period 2) and at the end of the study (after period 8), after the leaders had succeeded or failed based on the situation in which they were placed.

Figure 4 on the right provides the ratings of how good people perceive the leaders to be. As the left part of the graph indicates, leaders were evaluated as equally good based on what they actually did as leaders – that is, immediately after they addressed their groups. This is what we would expect, since the leaders did not differ systematically in their ability. But, at the end of the experiment, when leaders in easy-to-lead situations had "succeeded" in getting high effort from groups and leaders in hard-to-lead situations had failed, we see a large difference in how leaders are evaluated – an almost

Fig. 4 **Ratings of leadership quality are determined by the situation**

Ratings are from 1 (extremely poor) to 9 (extremely good)



Note: The left part of the graph shows the average rating of leaders' ability immediately after they spoke. The right part shows responses to the same question at the end of the experiment. Ratings are from 1 (extremely poor) to 9 (extremely good).

Source: Weber et al. (2001)

1.5-point difference on a 9-point scale. Moreover, the experiment also showed that members of groups with leaders in hard-to-lead situations were more willing to pay to replace the current leader, even though the leaders' actual ability had nothing to do with whether the group succeeded or failed.

A natural question is always whether a result like this is something that only occurs in a laboratory experiment, with people who are not experienced leaders and with evaluations by students incentivized by relatively small amounts of money. Laboratory experiments like these naturally sacrifice realism in order to make a point cleanly and to rule out other interpretations. But, the question of whether something that happens in a laboratory setting also happens in the "real world" is an important one. Therefore, it is valuable that data from important real-world settings supports the findings from this study. For instance, a research study by Justin Wolfers uses state level gubernatorial elections from the United States to study whether incumbent governors are credited or blamed for economic conditions that are beyond their control – for example, for variation in the price of oil, which affects state-level economic growth but is determined in international markets over which state-level policies exert very little influence.[5] Consistent with the above laboratory experiment, incumbent state governors are rewarded and punished at the ballot box for factors that they do not control. Another study shows that the compensation of CEOs in the oil industry varies significantly with variations in the price of oil – again, a factor that is largely beyond the leader's control.[6]

So, while what is perhaps the cleanest evidence of this phenomenon arises in an abstract laboratory experiment, we see similar evidence from important economic and political contexts (another particularly striking example is depicted in the box "Leadership – More than face value?" on page 13).

Key implication #1: Our evaluations of leaders are often biased by factors over which the leaders have no control.

Leadership – More than face value?

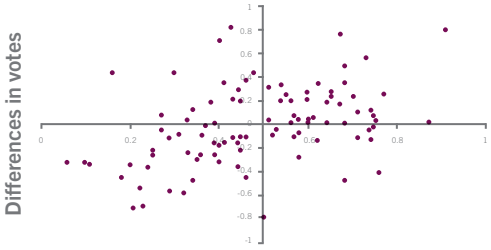
We like to think that successful leaders are those who possess great intellect, vision and communication abilities, and who obtain results through the effects of their words and actions on followers. As I note in this section, successful leaders may often be those who simply happen to find themselves in the right – i.e., easy-to-lead – situations.

There is also other striking evidence that what makes one leader more successful than another may depend on seemingly irrelevant factors. A clever study by Princeton researchers showed people pictures of unfamiliar candidates for political office – in elections for the US Senate and House of Representatives – and asked these people to rate how competent the person appeared, based solely on what they could infer from the picture.[7] Strikingly, these very superficial ratings of competence predicted the actual election outcomes far better than chance – the candidate whose appearance was perceived as more competent won the election roughly 70% of the time. As the graph on the right shows, the differences in competence ratings provided by people who knew nothing about the candidates even predicted the differences in actual vote shares between the two candidates.

Perhaps even more surprisingly, in a subsequent study researchers asked Swiss children, aged 5 to 13, to view faces of pairs of candidates from French parliamentary elections and select one to be "the captain of your boat" on a hypothetical adventure.[8] Again, the children's ratings accurately predicted which candidate obtained more votes in the actual election much better than chance – in this case, 71% of the time.

What these results show is that who is perceived to be an effective leader – in fact, who gets elected to very powerful leadership positions in government – is strongly influenced by seemingly irrelevant aspects of physical appearance that have little to do with what we would think of as leadership.

Which person is the more competent?



Note: Researchers asked people to rate the general competence of two unfamiliar people. The faces corresponded to candidates in US Congressional and Senate elections. For instance, some people saw pictures of the two candidates above, Russ Feingold (left) and Tim Michels (right), who contested the 2004 election for a Senate seat from Wisconsin. As the bottom graph shows, there was a strong positive relationship between the percentage of people viewing one candidate as more competent (even though these people knew nothing about the two candidates) and the candidate's vote share in the actual election contested between the two candidates.

Source: Todorov et al. (2005)

The power of leading by example (and keeping followers partly in the dark)

One of the most important economic insights into how leaders can influence followers comes from the work of Benjamin Hermalin. He notes that leaders often convey the importance and value of an activity by the example they set for those they lead – for example, a boss working long hours to convey the importance of a project or Joseph Stalin remaining in Moscow to encourage resistance by others during the battle for the city in World War II. Hermalin's work produced mathematical models of why this kind of leadership might be effective, and why it often crucially depends on followers not having as much information as the leader.[9]

While the models are too complicated to describe in detail here, the key insight can be understood through a simple example that uses a bit of game theory. Suppose a boss can either "relax" – go skiing over the weekend with friends and family – or "work" – come in and spend an otherwise nice weekend at the office. A worker also faces these same two choices, and is free to voluntarily decide whether to spend the weekend working. Weekends vary in terms of the impact that working has on the firm's success or profitability, from which both the boss and worker potentially benefit. Specifically, there is either a "great," "moderate," or "low" productivity from spending Sunday working, and each type of weekend is equally likely. The three tables on the right describe the overall benefits, to the boss and to the worker, from spending the weekend either relaxing or working.

The numbers in each cell of the tables represent how desirable the worker and

Fig. 5 **Simple game-theoretic example of boss's and worker's benefits from working over the weekend**

Benefit from spending the weekend working when the productivity is **high:**

		Boss's decision: **Work**	Boss's decision: Relax
Worker's decision	**Work**	**Worker: 300, Boss: 300**	Worker: 150, Boss: 250
	Relax	Worker: 250, Boss: 150	Worker: 100, Boss: 100

Benefit from spending the weekend working when the productivity is **moderate:**

		Boss's decision: Work	Boss's decision: **Relax**
Worker's decision	Work	Worker: 150, Boss: 150	**Worker: 75, Boss: 175**
	Relax	**Worker: 175, Boss: 75**	**Worker: 100, Boss: 100**

Benefit from spending the weekend working when the productivity is **low:**

		Boss's decision: Work	Boss's decision: **Relax**
Worker's decision	Work	Worker: 0, Boss: 0	**Worker: 0, Boss: 100**
	Relax	**Worker: 100, Boss: 0**	**Worker: 100, Boss: 100**

Note: These tables describe the value to a boss and worker from different combinations of their decisions to spend the weekend relaxing or working. In each cell, the first number describes the value to the worker of that outcome and the second number describes the value to the boss. The values can be interpreted relative to a baseline of 100 units of satisfaction from spending the weekend relaxing (i.e., the Relax-Relax outcome always yields a benefit of 100 for both the boss and worker).

Source: Tables adapted from Potters, Sefton and Vesterlund (2007)

boss find the resulting outcomes. The first number shows the value of that outcome for the worker and the second number for the boss. So, for example, in every table, the bottom-right cell shows that if both boss and worker spend the weekend relaxing, they always get a baseline satisfaction of 100, regardless of how productive it would have been to spend the weekend at the office.

In the table, the rows and columns highlighted in blue indicate the preferred choice for the boss and worker, if they know the actual benefit from working that weekend. Thus, when there is low productivity from working, as in the bottom table, neither has any reason to work. When there is moderate benefit, they both are better off if they both spend the weekend working (Worker: 150, Boss: 150) than if they both do not (Worker: 100, Boss: 100). But, each prefers to spend the weekend relaxing, and getting a benefit of 175, while the other works and gets a benefit of only 75. So, when both of them know there is only moderate productivity from working, no one will work – but each will hope that the other one does so.

In weekends with high productivity from working, things are different. Both boss and worker prefer to spend the weekend working, even if the other does not do so – the returns from working are simply higher, regardless of what the other does. So, economic theory gives us a simple prediction when both boss and worker know what type of weekend it is: both will work when there is high productivity from doing so, but neither will work when the productivity is low or moderate. This is true even though they would both benefit if they both chose to work when productivity is moderate, each receiving 150, rather than both relaxing and receiving 100.

Now, consider what happens if only the boss knows what type of weekend it is – whether there is high, moderate or low productivity from working. And, suppose that the boss can tell the worker, on Friday, "I'm going to spend the weekend at the office." That is, the boss can set an example by committing to work over the upcoming weekend. It turns out that, in this situation, game theory tells us that the boss will choose to work both when the productivity from working is high and when it is moderate, and the worker will always work when the boss chooses to do so.

A key part of this prediction is not only that the worker observes that the boss works on the weekend, but also that the worker does not know the actual productivity of working on the weekend. For example, if the worker knew that the actual productivity was moderate, then seeing the boss working would not lead the worker to voluntarily work that weekend – the worker would still prefer to relax and receive 175 than work and receive 150. (Of course, we are assuming that the boss can't simply make the worker come to work over the weekend, which is true in some real-world employment relationships but certainly not in others; but, these are precisely the kinds of situations where a leader's ability to motivate followers is critical.)

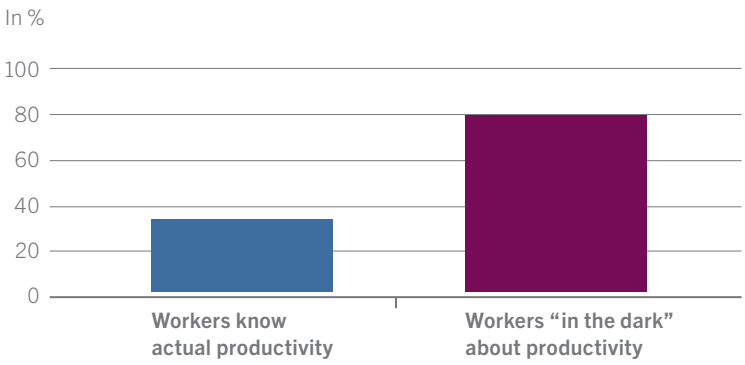
But, if the worker does not know the actual productivity, then seeing the boss coming to work over the weekend leaves the worker believing that the actual productivity must be either high or moderate – the boss would never work if it were a low-productivity weekend. In this case, the worker knows that working will yield him an outcome of either 300 or 150, and each is equally likely. So, in expectation, the worker receives 225 (½ × 300 + ½ × 150) from working. On the other hand, relaxing will yield the worker an outcome of either 250 or 175, where again each is equally likely, meaning that the expected benefit from not working is 212.5 (½ × 250 + ½ × 175). Since 225 is more than 212.5, the worker will come into work when he sees the boss doing so.

Therefore, a critical element of this theoretical prediction is not just that the worker sees the boss working, but that the worker is "in the dark" about the actual productivity from working that weekend. The fact that the worker doesn't really know the actual productivity of the weekend is what motivates him to work when it is moderate – he doesn't want to miss out on the benefits of working on a high-productivity weekend. So, to be effective, a boss needs not only to lead by example (by working on weekends when the productivity from doing so is either high or moderate), but the boss must also keep workers uninformed about the true value of working that weekend; otherwise, they will never work when the actual productivity is moderate. Note also that the worker does not mind this lack of information. The worker ends up doing better when both end up working over the weekend (150) than when they both do not (100).

Of course, this is a theoretical prediction. Does it actually work as predicted? A clever study by Jan Potters, Martin Sefton, and Lise Vesterlund tested this prediction. They recreated the above situation in a laboratory experiment, where human subjects made choices through computer terminals and received real money that corresponded to the outcomes in the tables above. A key element of the experiment was that in some cases workers knew the actual benefits from working, while in others they did not. This lets us see whether it is actually important for workers to be in the dark in order to follow the leader's example.

This is evident in figure 6, which shows the frequency with which workers chose to work, after observing the boss choosing to work. When the workers knew the actual productivity, they worked only one-third of the time that they saw the boss working. But, when workers did not know the true productivity, they worked 81% of the time that they saw the boss working, confirming the key prediction

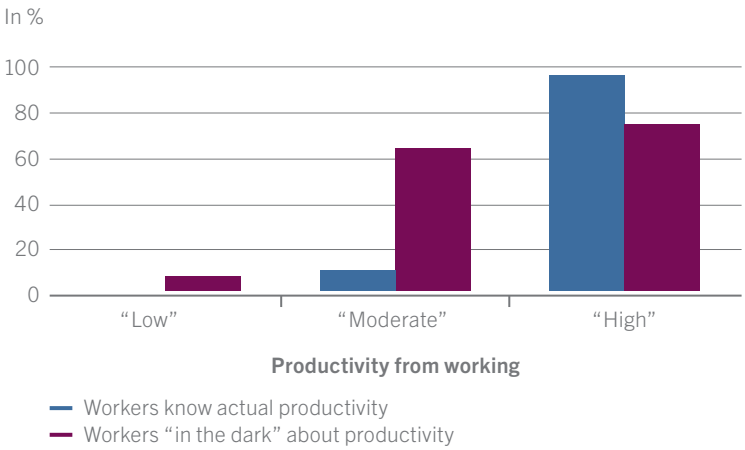
Fig. 6 **Leading by example can be more effective when workers have less information**



Note: The graph shows the percentage of the time that a worker will choose to work, after observing the boss working, and based on whether the worker knows the actual productivity of working ("high," "moderate" or "low") or does not know the productivity.

Source: Potters, Sefton and Vesterlund (2007)

Fig. 7 **Frequency of workers' working based on productivity and knowledge about productivity – Setting in which leaders can lead by example**



Note: The graph above shows the frequency with which workers' work, based on the productivity of working ("low," "moderate," or "high") and whether the workers know the actual productivity or are unaware of it.

Source: Potters, Sefton and Vesterlund (2007)

of the theory. So, consistent with game theory, the leaders are more effective when workers are in the dark about the actual productivity of working.

Does this actually lead to workers working more when the productivity of the weekend is moderate? Figure 7 shows what happened. Consistent with the theory, when workers know the actual productivity, they work very little when the productivity is either low or moderate – these are the cases in which the worker is better off not working, though the worker would prefer the outcome in which both the boss and worker work when productivity is moderate to the outcome in which neither works. Also consistent with the theory, workers almost always work when the productivity is high and they know this.

working, rather than relaxing, when the productivity is moderate.

Key implication #2: Leading by example is more effective when leaders have better information than their followers. In some cases, a leader can be more effective by restricting how much information he or she shares with followers, and letting the leader's actions do the talking.

When the workers are in the dark – and do not know the actual productivity, they also work very little when productivity is low and work a lot when productivity is high. But, now, they also work a lot more (64% of the time) when productivity is moderate. This is because they are following leaders who work both when productivity is high and when it is moderate as the theory predicts. Note that this makes everyone better off, as both bosses and workers benefit from both of them

Words matter

As I noted earlier, economists have typically assumed that the only way, as a leader, to get people to do things is to use carrots (e.g., pay raises) or sticks (e.g., threats of firing) to incentivize the behavior. One of the important contributions of recent research on leadership in economics is to test the extent to which this is really true. Can leaders also "motivate" and "inspire" workers by their statements and speeches? Or is the only way to get followers to do something to create hard incentives for them to do it?

Several studies use the weak-link environment that we described earlier to investigate the power of words as a motivational instrument of leaders. As we already saw, leaders speaking to groups in this type of situation can produce increases in effort – though, in that case, the situations were either so easy or difficult to lead that, in the end, the leaders made little difference. But, more recent studies investigate how the effect of leaders speaking to groups compares to the effects of simply paying people to exert more effort.

The most direct comparison is from a study described in figure 8.[10] In this study, subjects in a laboratory experiment again performed the weak-link task for several periods, in this case 18. The situation was constructed, by modifying the benefits from different outcomes, to be initially challenging – so that groups almost always failed in the first 6 periods. Then, the study introduced two possible mechanisms for improving effort.

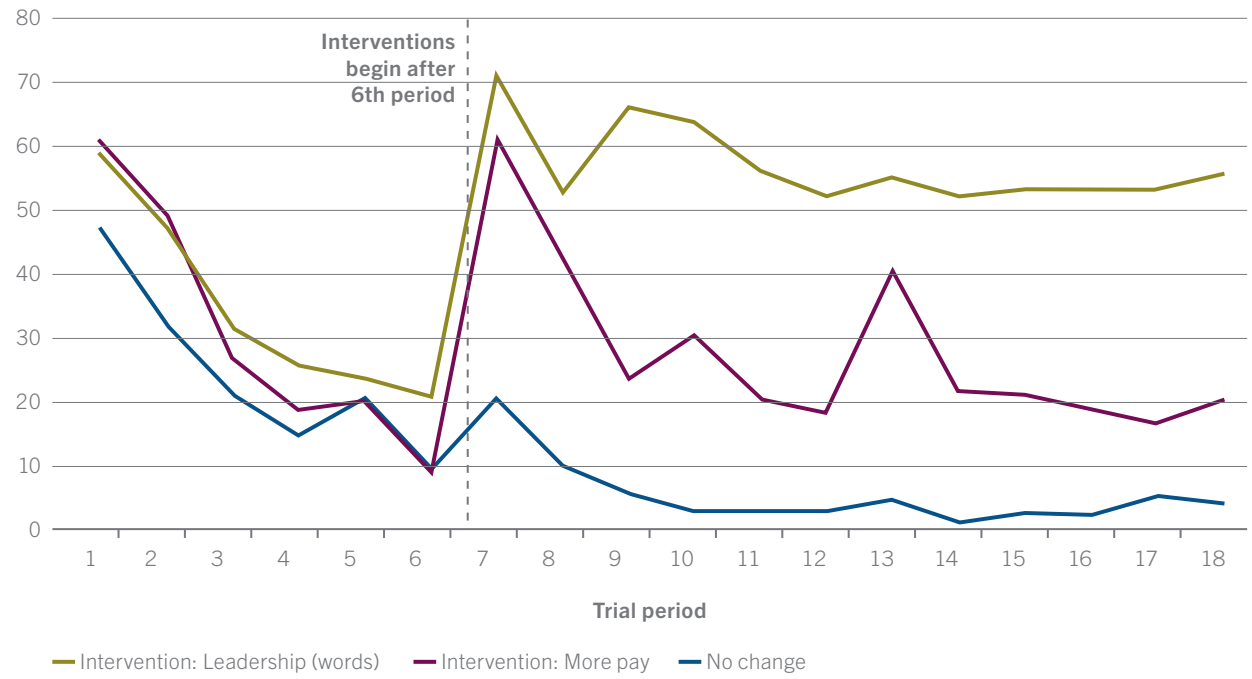
In some cases, the groups were paid more for exerting higher effort – imagine adding higher numbers to the outcomes in the upper left of the table that we saw before (see figure 2 on page 10). As the red line in the figure on the next page shows, paying people more for higher effort was effective. Not surprisingly, people contributed more effort when they had more to gain from doing so. Effort increased immediately to about 60%. But, this increased effort, while persistent, declined over time to settle at around 20% of the possible effort. So, paying people more leads them to exert more effort, but the effects are limited in this case.

In another intervention, represented by the green line in the graph, the groups were not paid any more than they had been earlier, but one person was randomly selected to act as a "leader" and make statements to the group before each of the remaining 12 trials. These statements typically urged followers to exert higher effort and pointed to the mutual benefits that could be obtained by everyone working harder. These statements gave the workers no additional information – in this case, the leader did not have access to any information that the workers did not have. However, as the figure shows, these statements have a much stronger effect on the effort provided than simply paying more. Average effort jumps to about 70% as soon as a leader is able to address the groups. More importantly, the effect of having a leader continues to be large throughout the remaining periods, yielding effort consistently above 50%.

While "leaders" in the above experiment are simply participants in a laboratory experiment – mainly university students – another study shows that the effects can be even larger when one turns to experienced leaders.[11] This study uses a

Fig. 8 **Average effort in response to incentive- and leadership-based interventions**

In % Average effort exerted by workers



Note: Graph shows average effort by workers in a weak-link setting, where the first stage (periods 1–6) was designed to induce failure and the second stage (7–18) tested the effectiveness of higher pay and statements from leaders for producing a "turnaround."

Source: Data from Brandts, Cooper and Weber (2014)

sample of Executive MBA program participants, with at least five years of experience in supervisory roles and average annual earnings over $120,000. The key difference between these experienced managers and students is that the managers are more likely to use good communication strategies – good managers in this study, and other related ones, avoid making vague long-term recommendations for higher effort and instead make specific requests for a concrete level of effort, which may not be the highest one, and highlight the mutual benefit to all workers of jointly reaching this effort target. That is, statements like, "OK, let's try all moving to 50% effort – give it a shot; if we all do it at this moment, we will improve our earnings from 100 to 150," tend to be the most effective. Executive MBAs tended to be more likely to use effective messages of this kind and were, therefore, more effective as leaders.

The power of words versus incentives is also evident in a recent field experiment conducted in a collaboration between researchers at the University of Zurich, the University of Lausanne, and the University of Birmingham.[12] This study set out to test whether real workers in a natural setting, who are unaware that they are participating in an experiment, can be influenced to exert more effort merely by the words and rhetorical techniques employed in communication from a leader. The study involved a fundraising campaign for a children's hospital in the UK. As part of the campaign, workers were hired through a temporary employment agency to prepare envelopes to be distributed to potential donors. The key

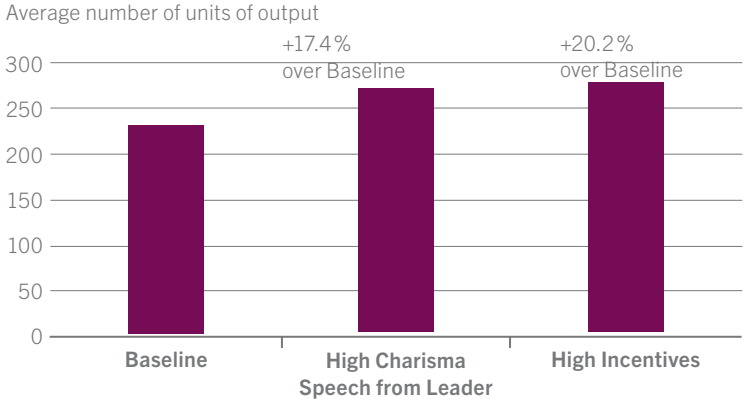
measure in the study was how many envelopes workers completed during the period in which they were supposed to be working.

To study the power of words and charisma, in comparison with incentives, the study employed three different variations. In one, the Baseline, workers received a motivational speech from a leader that contained a lot of information about the purpose of the fundraising campaign and the good it would do. In a second version, workers received a speech that was identical in substance, but utilized a greater number of charismatic leadership techniques in communication – including metaphors, similes and analogies, contrasts, rhetorical questions, the setting of high goals, and more animated voice and gestures (see box "More than words" on page 22). In both cases, a professional actor hired by the research team delivered the speeches. Finally, in a third version of the experiment, the actor delivered a speech with the same moderate level of charisma as in the Baseline, but workers were paid considerably more for completing envelopes.

Hence, the study tests the effectiveness, relative to the Baseline, of either paying workers more or using more charismatic communication as means for a leader to motivate more effort from followers. This is the first study to compare these two tools available to leaders in an experiment using real workers.

The results of the study are provided in the graphs on the right. In the Baseline, workers completed, on average 230.9 letters. Not surprisingly, when they were paid more, workers completed more letters – the average increased to 277.7. However, by instead providing workers with a more carefully constructed and delivered speech, the increase in their effort was almost identical to that under the much higher pay. In this case, they completed 271.2 envelopes, a 17.4% increase over the Baseline. Thus, this

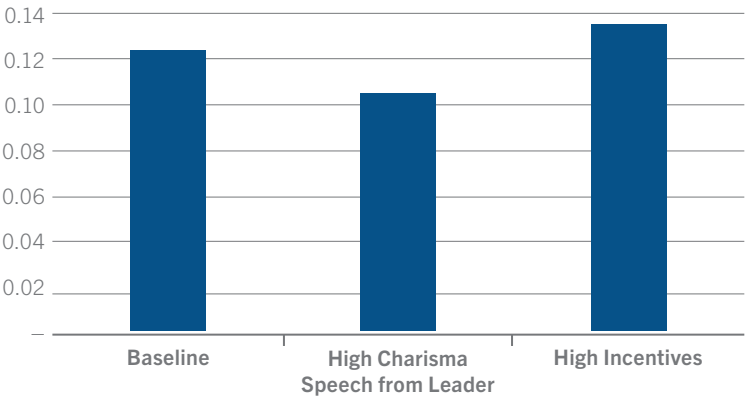
Fig. 9 **Real workers respond to both leadership and incentives**



Note: Average number of units of output (completed fundraising mailing letters) based on different interventions. The effects of charismatic leadership speeches and higher incentives are statistically indistinguishable.

Source: Antonakis et al. (2014)

Fig. 10 **Leadership costs less than paying workers more**



Note: Cost per unit of output (completed letter for charity fundraising) measured in British pounds.

Source: Antonakis et al. (2014)

study provides real-world evidence that the nature of words from leaders matters for eliciting effort from followers.

Importantly, while the workers worked roughly the same amount under high incentives and with more charismatic communication from leaders, one of these interventions costs much less than the other. As figure 10 shows, paying workers more raised the cost per letter above the cost in the Baseline. However, the more persuasive communication from the leader had almost the same effect on effort as paying more, but at no additional cost.

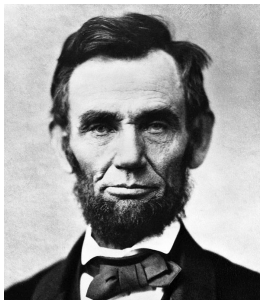
Key implication #3: Effective leaders recognize the power of words. The words a leader uses, and how they are delivered, can greatly affect the extent to which workers exert effort in pursuit of a common goal. In many instances, words may have a stronger effect than financial incentives.

More than words

An effective leader recognizes the power of words to motivate and inspire followers, using oratorical techniques like metaphors, contrasts, reflections of the group's sentiments, and three-part lists:

"But, in a larger sense, we can not dedicate – we can not consecrate – we can not hallow – this ground. The brave men, living and dead, who struggled here, have consecrated it, far above our poor power to add or detract. The world will little note, nor long remember what we say here, but it can never forget what they did here. It is for us the living, rather, to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced."

Abraham Lincoln (Gettysburg Address 1863)



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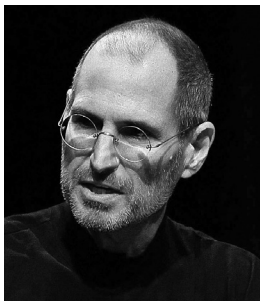
"You know, where we are right now, is we're shepherding some of the greatest assets in the computer industry. And if we want to move forward, and see Apple healthy and prospering again, we have to let go of a few things here. We have to let go of this notion that for Apple to win, Microsoft has to lose. We have to embrace a notion that for Apple to win, Apple has to do a really good job. And if others are going to help us, that's great, because we need all the help we can get. And if we screw up and we don't do a good job, it's not somebody else's fault. It's our fault … This is about getting healthy, and this is about Apple being able to make incredibly great contributions to the industry, to get healthy and prosper again."

Steve Jobs (Macworld Boston 1987)



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"Starting today, we must pick ourselves up, dust ourselves off, and begin again the work of remaking America."

Barack Obama (Presidential Inaugural Address 2009)

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Adding statements like these to a speech delivered by a leader led to more effort in an experiment conducted with real workers.

Ethical firms: The right leader matters

An important question regarding leadership is what role leaders play in the ethical conduct of followers. Many examples come to mind of where the "wrong" leaders – think of Bernard Ebbers at WorldCom, Jeffrey Skilling and Kenneth Lay at Enron – are believed to have caused or facilitated widespread unethical conduct. So, is it the case that "bad" leaders yield "bad" groups or firms?

Establishing a definitive answer to this question is not easy. The fact that a bad organization has a bad leader may reflect a relationship that goes in the other direction. Is it just perhaps that corporations and boards where ethics and compliance are not valued highly appoint leaders who similarly place low value on moral conduct? In addition, it is likely that we only observe a small fraction of the unethical conduct that takes place in real businesses. Perhaps there are many good firms led by unethical leaders, and unethical firms led by good leaders, and we simply don't observe enough of the unethical conduct to notice a relationship. So, the domain of ethical conduct is one of the areas where it is hardest to establish whether leaders cause the behavior of those they lead.

Once again, we can turn to the power of controlled experiments to test whether such a relationship, in fact, holds. This growing body of evidence suggests that, indeed, the type of leader selected to lead a group – even when these leaders are appointed at random – can influence the ethical conduct of followers.[13]

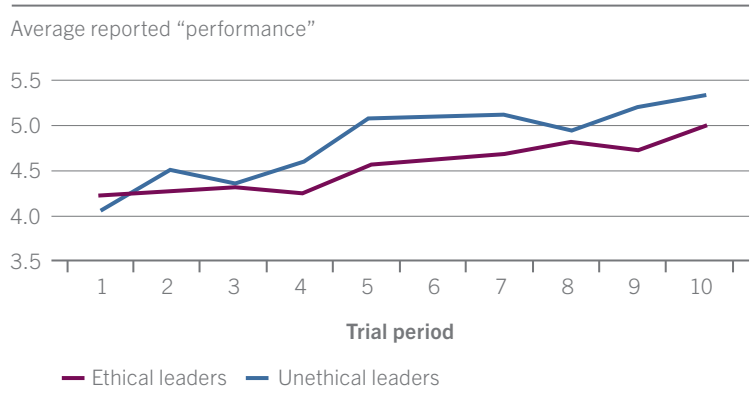
For example, one study, conducted by researchers at the University of Zurich, investigated whether dishonest leaders produce groups that also act more dishonestly. The experiment created a situation in which individuals faced a monetary temptation to act dishonestly – doing so benefited both themselves and the group they were in. Specifically, in this study, subjects performed a simple task in which they rolled a fair six-sided die to determine their "performance." Higher die-roll outcomes corresponded to higher performance. However, nobody except the individual rolling the die could observe the actual die roll, meaning that a participant could report any performance level he or she wanted. The incentives were such that the higher die roll one reported, the more money one made both for one's self and for one's group. More precisely, a "firm" with higher average reported "performance" obtained a higher share of the industry profits. Think of this reflecting a firm that can get ahead of its competitors by cutting corners and bending the rules, as when a manufacturing firm bribes public officials to obtain production permits or circumvent labor and safety regulations, or when a publicly traded company attracts investment by manipulating earnings statements.

To this situation, the experiment introduced leaders, who were randomly appointed to groups. These leaders could both distribute incentives to workers, in the form of performance bonuses, and could make statements to workers – for example, praising either high performance reports or honesty. The experiment also included a phase that allowed the researchers to assess these leaders' tendencies to act honestly or dishonestly in a separate task. So, there was a measure – separate from anything the group did – of whether they had been randomly appointed an "ethical" or "unethical"

leader. Importantly, group members did not know if they had been assigned an ethical or unethical leader.

So, what was the effect of leaders on groups? The figure below shows the average reported performance in groups with "ethical" and "unethical" leaders. If everyone were reporting their performance honestly, then the average report would be 3.5 – the expected value of a fair six-sided die.

Fig. 11 **Unethical leaders produce more unethical groups**



Note: The vertical axis is the average reported "performance", which should correspond to the outcome of a fair six-sided die. Leaders were classified as "ethical" or "unethical" based on their honesty in a separate task, and were then randomly assigned to lead groups. Leaders could distribute performance bonuses and make public statements to their groups. If workers report their performance honestly, one would expect average reported performance of 3.5.

Source: d'Adda, Darai and Weber (2015)

Notice that the first time that the task is performed, there is a bit of misreporting, but not much, and this is even slightly higher in the groups with "ethical" leaders. However, over the course of the next 10 trials, the groups led by unethical leaders have performance reports that increase at a much faster rate, rising by 31% from the first to the last period. However, the groups with ethical leaders have performance reports that rise very little in the first four trials, and then rise slowly over the remainder of the experiment. By the end of the experiment, groups with ethical leaders have performance reports that are only 18% higher than where they started. How do unethical leaders get their groups to act dishonestly? Both incentives and what leaders say provide opportunities for leaders to influence the behavior of followers. Indeed, when leaders link the incentive bonus to workers' reported performance, workers tend to report higher numbers. Similarly, when leaders make more statements encouraging workers to report high numbers, workers do so. As the graphs on the next page show, unethical leaders tend to employ both strategies more often.

In the top panel of figure 12, we see that ethical leaders use the incentive bonus in a way that creates very little incentive to report high numbers – the left bar shows there is almost no relationship between the performance a worker reports and the size of the bonus that the leader gives to that worker. That is, a correlation near zero means there is virtually no relationship between these two things. For unethical leaders, however, there is a positive relationship – unethical leaders give a greater share of the bonus to those workers who report high numbers.

The bottom panel shows the relative share of statements made by a leader that encourage dishonesty. A value of 0.5 corresponds to a leader who sends equal numbers of messages encouraging honesty and dishonesty. A value of 1 corresponds to a leader who only encourages dishonesty. We see that unethical leaders use more statements that encourage dishonesty.

Interestingly, even ethical leaders use more messages encouraging dishonesty than honesty – that is, the value for them is above 0.5. This largely reflects how their behavior changes over time and explains the increasing trend in reported performance even for groups with ethical leaders. Over time, even ethical leaders start to use more messages encouraging dis-

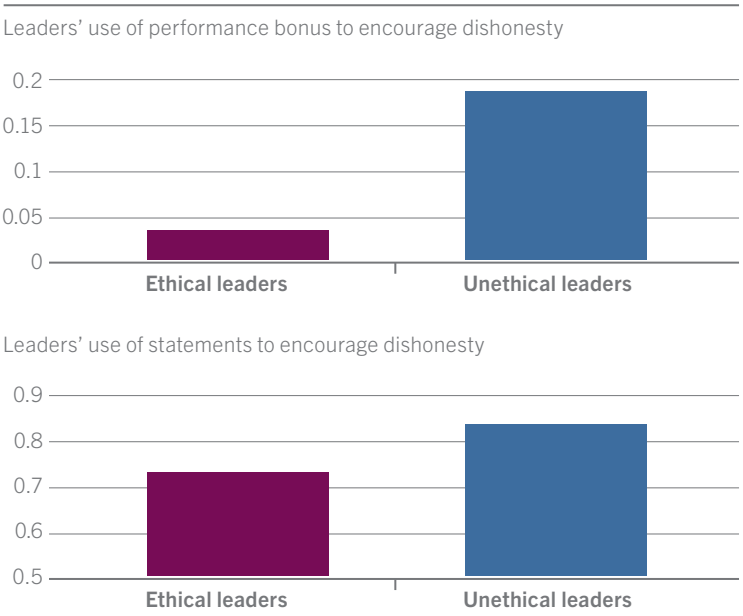
honesty. After all, their relatively honest groups are repeatedly losing out to the dishonest groups led by unethical leaders.

The above laboratory experiment cleanly shows that unethical leaders – even when they are randomly assigned to groups that tend to initially be no more or less ethical than other groups – end up producing groups that act more unethically. Of course, we again would like to know whether the same thing occurs outside of laboratory experiments. As I note above, it is very difficult to establish this in natural settings, where leaders are not appointed at random and where unethical conduct is often hidden from view.

Fortunately, one careful recent study does a nice job of showing evidence for this type of relationship in a natural setting.[14] The context of the study is the management of a pooled common resource among small groups in Ethiopia. As part of a publicly funded conservation program, each group was provided with an area for which they were responsible for cultivating and sustaining the growth of young trees. Resource conservation in this region is highly important; due to prior deforestation and exploitation the number of young trees is limited, meaning that the ecosystem is under threat of permanent long-term damage.

To study the degree to which leaders are concerned with ethical behavior, the researchers conducted simple experiments measuring leaders' willingness to incur costs to punish wrongdoers. Specifically, the researchers had community members play a simple two-person game in which a pair of community members could decide whether to act selfishly or help one another, by contributing money to a common pool that increased the value of contributions and benefited both individuals. When one person contributed money, it increased in value and benefited both group members. But, to create a tension, players also had an incentive not to contribute and instead free ride from the benefits produced by others' contributions.

Fig. 12 **Unethical leaders use both incentives and statements to encourage dishonesty**

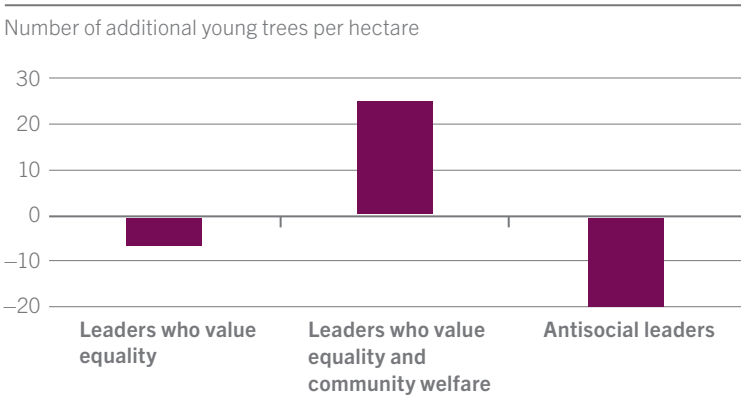


Note: The top graph shows the extent to which leaders link the incentive bonus that they can distribute to a worker's reported "performance." A value of zero indicates that leaders do not encourage workers to report high numbers, while a value of one indicates that leaders perfectly link bonuses to higher reported performance. The bottom graph shows the extent to which leaders use communication to encourage dishonesty by workers. A value of one indicates that a leader only makes statements that encourage reporting high numbers, while a value of zero indicates that a leader only makes statements that encourage honest reporting.

Source: d'Adda, Darai and Weber (2015)

The critical part of this experiment, however, was a second stage in which the group leaders could punish community members for their behavior. Some leaders showed concerns for equality and community welfare, by punishing community members who contributed less than their counterpart or who did not contribute fully. Others showed concerns for equality – for example, they did not punish either community member if neither contributed. Importantly, however, other group leaders used punishment antisocially, punishing community members indiscriminately – even if they contributed high amounts. The researchers vali-

Fig. 13 **Ethical and unethical leaders affect resource conservation by real-world groups**



Note: Leaders were classified by their behavior in a simple experimental game that gave them the opportunity to punish community members for acting selfishly rather than contributing to a valuable community project. "Leaders who value equality" tended to punish community members who took advantage of one another. "Leaders who value equality and community welfare" also tended to punish community members who did not contribute to the community project. "Antisocial leaders" punished indiscriminately, even punishing community members who contributed.

Source: Kosfeld and Rustagi (2015)

dated that those leaders they classified as antisocial also tended to be rated as worse leaders by community members.

The researchers then tested the extent to which leaders' willingness to punish wrongdoers or to punish indiscriminately influenced the extent to which groups acted to preserve common forest resources. The key measure of a group's ethical behavior in this setting is the number of young trees per hectare, counted several years after the onset of the program.

The figure on the left shows a striking effect of a leader's type – measured using the above simple experimental game – on the additional young trees sustained by that leader's group. In particular, relative to a group of baseline leaders, communities led by those leaders who valued community welfare obtained almost 25 more trees per hectare, a substantial difference. Meanwhile, those leaders classified as antisocial led groups that sustained much fewer young trees, very likely reflecting exploitation of natural resources by group members. These relationships are not simply explained by characteristics of the groups, since the researchers measured and separately controlled for characteristics of the community members. Hence, similar to the laboratory study above, we see that the degree to which a group has an ethical or unethical leader affects the ultimate ethical conduct of followers.

Key implication #4: Leaders can play a critical role in maintaining ethical conduct in organizations. Ethical leaders tend to produce groups with more ethical behavior, and unethical leaders tend to produce less ethical groups.

Conclusions

Economists have generally ignored leadership in their research, theoretical models, and teaching. However, as this Public Paper notes, this is changing. There is a rapidly growing body of economic studies that view leadership as a fundamental issue necessary for economists to understand better. The economic approach – including carefully designed experiments that let us really identify whether leaders actually cause outcomes – has produced a better understanding of leadership, where it matters, and what characteristics make some leaders more effective than others.

For example, this work has demonstrated that we should often be careful in ascribing too much importance to leaders, the things they do, and their control over outcomes. When things go well or poorly, we naturally attribute part of it to good or bad leadership. But, these judgments can be wildly mistaken; we often credit or blame leaders for things that are beyond their control. In addition, we think that the selection of people for critical leadership positions – such as powerful roles in government – is a serious process with great attention paid to the qualities that make some people better leaders than others. But, as it turns out, children staring at photographs for a few seconds seem to identify much of what goes into these judgments.

Putting this all together, the success or failure of a leader is often a haphazard process – full of biases and luck – and frequently detached from the noble traits that we assume are characteristic of good leadership. An effective leader will take this into account, recognizing that there are many things that make leaders successful or unsuccessful, but over which he or she has no control.

On the other hand, there are also many ways in which effective leaders do influence the behavior of followers. Setting a good example can be an important function of leadership; but economic theory and experiments demonstrate that this is most effective when the leader has access to information that followers do not have. In such situations, leading by example can be particularly effective as a way of convincing followers of the value of collective effort. In fact, leaders may sometimes want to withhold information from followers, and let their actions do the talking, thus making both leaders and followers better off.

It is not surprising that leaders also influence the behavior of followers through the use of "hard" incentives; that is, the use of carrots and sticks as means to induce desirable behavior. This is consistent with the primary role of leaders in much of economic theory. What is more surprising is the extent to which mere words have a similar – or, sometimes, even stronger – effect as financial incentives. Several studies show that leaders exert profound influence on their followers' behavior through what they say, even when they do not provide followers with any new information. Moreover, it is not just what a leader says, but how the leader says it. Charismatic rhetorical techniques like metaphors and analogies, rhetorical questions and three-part lists can enhance the degree to which a leader's words resonate with, and ultimately motivate, followers. While conventional wisdom has held for centuries that powerful orators are effective leaders and motivators, this had not been rigorously tested as a mechanism for eliciting harder work, until very recently. Ultimately, words matter a great deal, and may often

be a more cost-effective means of motivating effort than monetary incentives. These findings turn a lot of what students of economics typically learn about leadership – that it is about contract design and incentives – on its head.

Very recent research has finally established a clear causal link between unethical leaders and the unethical behavior of those they lead. Despite its widespread intuitive appeal and much anecdotal evidence, no one had shown that unethical leaders actually produce unethical groups. Recent studies in economics – relying on experiments and careful ways of measuring individuals' propensities to act unethically – have established a clear relationship: unethical leaders produce groups with more widespread unethical conduct. Therefore, in selecting a leader, issues of morality and character should play a prominent role.

Finally, a very exciting aspect of writing this Public Paper is that the research described here is just the tip of the iceberg. With a growing number of economists studying how, precisely, leaders affect followers and shape the groups and organizations they lead, much more stimulating and informative new evidence will arise. This evidence will not only make leadership a much more important part of economics training and research, but it will also ultimately greatly impact what economists can tell practitioners about how to lead organizations and societies more effectively.

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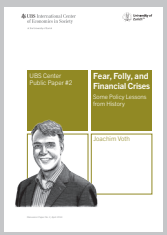

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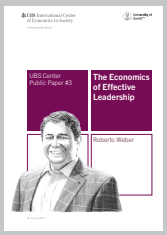

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